

551.578.1:551.509(794) NOTES, ABSTRACTS, AND REVIEWS

TWO SEASONAL RAINFALL FORECASTS FOR CALIFORNIA

Readers of the REVIEW will recall that in the November, 1925, issue we published the results of two investigations into the possibility of forecasting, on the basis of certain summer conditions, what the precipitation in the next following rainy season would be over California.

McEwen presented his computed and observed seasonal rainfalls for 7 groups of stations in central and southern California, and found that for each group a negative correlation was indicated between summer temperature of the surface waters of the Pacific Ocean off the California coast and the ensuing season's rainfall. The extent to which the computations of seasonal rainfalls have been borne out by the event, during the period 1916-17 to 1924-25, is most encouraging. It may be viewed in the following ways.

(1) There has been a rough numerical agreement between computed and observed values, over 75 per cent of the errors being of 2 inches or less.

(2) There has been agreement between the signs of computed and observed departures of precipitation from the nine-year normal, about 80 per cent of the time.

(3) In 56 computed versus observed trends of rainfall from one season to the next (7 groups of stations for 8 seasonal differences), there has been disagreement but eight times, indicating agreement in trend in 85 per cent of the cases.

McEwen's computed departures for the 1925-26 season (7 groups of stations) indicated rainfall in excess of normal by amounts ranging from 0.4 inch to 1.2 inch according to the group. Rainfall records for southern California to April 23 show that: The sign of the computed departure is already borne out by the event; the computed excess falls short of the actual excess; the actual trend since the 1924-25 season, while it is the reverse of the trend which results from considering the computed values for 1924-25 and 1925-26, agrees with the trend from the observed rainfall of the former season to the computed rainfall of the latter.

Blochman, from a comparison of certain pressure and rainfall conditions during summer and early autumn with the ensuing season's rainfall for central and southern California, arrived at several conclusions of which the following seem most pertinent to quote here:

(1) It is almost a certainty (better than a 90 per cent probability) that when South Pacific Lows enter south of Cape Mendocino in either September or October, the ensuing season, especially for southern California, will be average to wet. This high percentage does not hold good for northern California, but it does for central California.

(2) Assuming 0.21 inch to be an "average" summer rainfall at San Diego, the tabulation shows that 19 seasons out of the 21 that had average or more than average summer rains preceded average to wet seasons in southern California. But * * * when we consider only the appreciable summer rains at San Diego due to lows that came in from the Pacific, there are 19 seasons out of 20 that preceded average to wet seasons in southern California.

In the first week of October, 1925, San Diego experienced a rainfall of some $3\frac{1}{2}$ inches, from a low that appears to have developed close to or over the adjacent coast. The total excess of rainfall for the month was 3.2 inches. Discussing this event in the Berkeley Gazette for October 9, 1925, Blochman pointed out its probable bearing on the coming season's rainfall, and concluded that: "There is no reason why this season should be an exception to the rule, especially as it has the greatest early rainfall recorded."

In view of these advance estimates by both McEwen and Blochman of what the 1925-26 rainfall season

would bring forth, the rainfall at five representative stations in southern and central California from July 1, 1925, to April 23, 1926, compared with the *normal seasonal total*, is of interest:

	San Diego	Los Angeles	Fresno	San Francisco	Sacramento
To Apr. 23, 1926.....	Inches 15.56	Inches 17.36	Inches 9.28	Inches 20.45	Inches 15.61
Normal seasonal total to June 30..	9.70	15.62	9.82	22.52	18.56

—B. M. Varney.

TORNADO REPORTED FROM NORTHWESTERN OREGON

It is very rarely that tornadoes occur in the Pacific Coast States. Mr. W. J. Kelley, of McMinnville, Oreg., has sent to the Weather Bureau a report of what appears to have been a small tornado that damaged his farm on February 19, 1926. The account, together with photographs accompanying it, indicates the occurrence of winds which were certainly of tornadic violence, which felled many trees; the same storm destroyed a large "dry house" about a mile southwest of Mr. Kelley's farm. It is stated there was no lightning, thunder, nor hail with the storm, though it rained heavily for a short time. A friend of Mr. Kelley told him that "there seemed to be four or five little whirlwinds in a bunch coming down from one big and very black cloud and whirling around with great speed."—B. M. V.

RELATIONS BETWEEN THE TEMPERATURES, PRESSURES, AND DENSITIES OF GASES

Under the above title the Bureau of Standards of the U. S. Department of Commerce has published its Circular No. 279, by Mr. S. F. Pickering, associate chemist of the bureau. The author's abstract follows:

The attempt has been made, in discussing the relations between the temperatures, pressures, volumes, and weights of gases, to derive the formulas in a simple manner with the minimum requirements of theoretical knowledge on the part of the reader. The experimental data involving high pressures are presented in such a form that problems of this nature can be easily solved by introducing factors taken directly from the curves. The significance of the equations of state of van der Waals, of Dieterici, and of Berthelot are discussed, and the manner in which these quotations may be used to predict compressibilities is explained in detail. Comparisons of the calculated values with the experimental data for various gases are shown by means of a series of curves. There is included a rather extensive bibliography of the literature pertaining to the subjects herein discussed, together with a number of tables of conversion factors and equivalents.

THE EDGE OF THE DOLDRUMS

C. E. P. Brooks in the Meteorological Magazine for March, 1926, presents results of a study of the relation between rainfall and wind direction and constancy of direction at Malden and Ocean Islands, both of them close to the Equator and both under the influence of the trade winds. The uniformity of their ocean environment would lead one to expect winds of whatever direction to be of not greatly differing constitution in respect to temperature and relative humidity, which is indeed the case of the surface winds. But out of 72 months of record (in *Reveau Mondial*), 32 months in which wind directions averaged more than 60° from North and in